

REMARKS

Applicants respectfully request reconsideration of this application as amended. Claims 8, 14-15, and 18-20 have been amended. Claims 1-7 and 10-13 have been cancelled without prejudice. New claims 23-27 have been added. Therefore, claims 8, 14-27 are now presented for examination.

Objection to Drawings

With regard to Figure 4A, Applicant submits a new and corrected Figure 4A to replace the originally submitted Figure 4A. The new Figure 4A is submitted herewith.

With regard to Figures 1 and 3, Applicant submits new and corrected Figures 1 and 3 to replace the originally submitted Figures 1 and 3. The new Figures 1 and 3 are submitted herewith.

Claim Objections

Claims 3 and 8 are objected to for informalities.

With regard to claim 3, it has been cancelled without prejudice.

With regard to claim 8, as recommended by the Examiner, Applicant proposes amendment to the claim to overcome the objection. Accordingly, Applicant respectfully requests that the objection to claim 8 be withdrawn.

35 U.S.C. § 103(a) Rejections

Claims 1-2, 4, 7, 8-11, 14-17, and 21-22 stand rejected under 35 U.S.C.

§103(a) as being unpatentable over Stiles, et al., U.S. Patent No. 5,515,518 (“Stiles”) in view of Karp, et al., U.S. Patent No. 6,321,328 (“Karp”).

Claims 3, 5-6, 12-13, and 18-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Stiles in view of Karp as applied to claims 1, 10 and 16 above, and in further view of Applicant’s admitted prior art in the Background on the Invention (“Prior Art”).

As an initial matter, Applicant respectfully submits that neither Karp nor Prior Art teaches or reasonably suggests the limitations missing from Stiles. For example, Stiles discloses “[a]n improved branch prediction cache (BPC) scheme that utilizes a hybrid cache structure” which includes “[a] fully associative first level BPC [that] is a shallow but wide structure” and “[a] second direct mapped level BPC [that] is a deep but narrow structure” (Abstract). Stiles, for example, as acknowledged by the Examiner, does not teach or reasonably suggest an architectural branch target buffer (ABTB) or locating a branch entry in the ABTB corresponding to a conditional branch or allocating a third branch entry for the conditional branch in the ABTB after retirement of the conditional branch, as recited by claim 8.

Karp discloses improving the “execution unit for executing a sequence of instruction which may include a speculative load instruction” in order to improve “the performance of central processors which execute speculative load instructions” (col.1, lines 6-8 – col. 2, lines 1-2; see generally col. 2, lines 1-55). For example, Karp discloses “means for transferring the speculative data from the data buffer to the data

cache” and “means for retaining the speculative data in the data buffer when the speculative load instruction is committed” and “[i]n either case, the speculative data is provided to the execution unit with low latency” (col. 2, lines 19-26; see generally col. 2, lines 1-55). Karp, like Stiles, does not teach or reasonably suggest an ABTB or allocating a third branch entry for the conditional branch in the ABTB after retirement of the conditional branch, as recited by claim 8.

In contrast, claim 8, in pertinent part, recites, having “an architectural branch target buffer (ABTB) corresponding to [a] conditional branch” and “allocating a third branch entry for the conditional branch in the ABTB after retirement of the conditional branch; and subsequently perform branch prediction” (emphasis provided). Stiles, Karp, and Prior Art, neither individually nor when combined, teach or reasonably suggest the ABTB or allocating a third branch entry for the conditional branch in the ABTB after retirement of the conditional branch, as recited by claim 8. Accordingly, for at least the reasons set forth above, Applicant respectfully requests that rejection to claim 8 and its dependent claims be withdrawn.

With regard to independent claims 14, 16 and 21, they contain limitations similar to those of claim 8. Accordingly, Applicant respectfully requests that the rejection to independent claims 14, 16 and 21 and their dependent claims be withdrawn.

Conclusion

Applicants submit that claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request that the rejections be withdrawn and the application be allowed.

Invitation for a Telephone Interview

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Request for an Extension of Time

Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Charge our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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